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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,544	01/14/2005	Shiro Sakai	08228/071001	9344
22511	7590	02/28/2006	EXAMINER	
OSHA LIANG L.L.P. 1221 MCKINNEY STREET SUITE 2800 HOUSTON, TX 77010			ABRAHAM, FETSUM	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/521,544

Applicant(s)

SAKAI ET AL.

Examiner

Fetsum Abraham

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) the rest is/are rejected.
- 7) ☒ Claim(s) 4-7,9,10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

### DETAILED ACTION

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,8 are rejected under 35 U.S.C. 102(b) as being anticipated by McIntosh et al (5,851,905).

The patent discloses a compound semiconductor device in figures 3,4 comprising a multilayered quantum well composed of AlInGaAs barrier layer (11) and an InGaN layer (12) formed on substrate (15).

The following is taught in the patent in regards to the structures:

Detailed Description Text (27):

As already described with respect to FIGS. 1-4 and 6-9, quantum well light emitting diodes according to the invention include quantum well layers having controlled amounts of indium. The percentage of indium may be as high as 90% or more in order to obtain a desired frequency of emission. Unfortunately, heretofore it has been extremely difficult to obtain device quality indium gallium nitride or aluminum indium gallium nitride films using MBE or MOCVD techniques. Also, for high InN%, indium metal droplets can segregate at the interface between the InGaN active layer and the AlGaN or AlInGaN barrier layers. The presence of these In droplets can affect or even dominate the properties of these devices.

As for claim 8, the barrier layer (11c) adjacent the active layer where light emission takes place is an AlInGaN compound layer.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over McIntosh et al in view of Goetz et al (6,489,636).

The primary reference teaches all subject matter claimed but may have omitted to discuss the claimed In composition in the InGaN layer. It, however, discussed an important issue as the follows:

Detailed Description Text (27):

As already described with respect to FIGS. 1-4 and 6-9, quantum well light emitting diodes according to the invention include quantum well layers having controlled amounts of indium. The percentage of indium may be as high as 90% or more in order to obtain a desired frequency of emission. Unfortunately, heretofore it has been extremely difficult to obtain device quality indium gallium nitride or aluminum indium gallium nitride films using MBE or MOCVD techniques. Also, for high InN%, indium metal droplets can segregate at the interface between the InGaN active layer and the AlGa<sub>N</sub> or AlInGa<sub>N</sub> barrier layers. The presence of these In droplets can affect or even dominate the properties of these devices.

Clearly, the information reveals the role of In composition in such compound oriented layers specifically in relation to frequency of emission.

The primary reference teaches all subject matter claimed with the exception of the claimed In concentration is the claimed compound. The secondary reference, however, discloses a light sensitive material similar to the claimed invention and teaches the following about In concentration in its quantum layers:

Detailed Description Text (4):

A spacer layer 15 separates active region 16 from smoothing layer 14. Spacer layer 15 typically does not contain In and may be, for example, GaN or AlGa<sub>N</sub>. Active region 16 is typically a multiple quantum well structure of AlInGa<sub>N</sub> or InGa<sub>N</sub>, with an indium composition between 5 and 50% and an aluminum composition between 0 and 50%. A p-type region 17 is formed over the active region. P-contact 19 is formed on the upper surface of p-type region 17, and an n-contact 18 is formed on an exposed portion of n-type region 12. Alternatively, n-contact 18 is formed on an exposed portion of smoothing layer 14, as illustrated in FIG. 2. in figures 3,4 comprising a multilayered quantum well composed of AlInGaAs barrier layer (11) and an InGa<sub>N</sub> layer (12) formed on substrate (15).

While atomic composition of a compound semiconductor layer may be variable in nature that depends on desired effect of a given compound, the secondary reference, however, meets the claimed In composition in the respective layer. Therefore, it would have been obvious to one skilled in the art to limit In composition in the claimed

compound to the claimed range in order to avoid undesired level of In effects to dominate overall device optical characteristics.

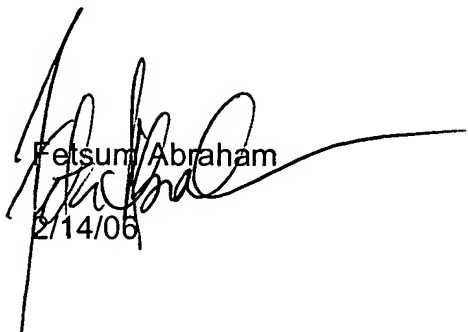
Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over McIntosh et al.

As for claim 11, "**product by process**" claims are directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685 and In re Thorpe, 227 USPQ 964, 966. Therefore, the way the product was made does not carry any patentable weight as long as the claims are directed to a device. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

Claims 4-7,9,10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The claims, of course, are subject to more intense search in the progression of activities ahead of time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-1911. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.

  
Fetsum Abraham  
2/14/06